

CLAIM OR CLAIMS

WHAT IS CLAIMED IS:

1. System for monitoring the performance of DWDM multi-wavelength  
5 systems, characterized in that a narrow-band and tunable low-pass  
filter (1) for the DWDM range is provided in a purely electronic form  
based on the principle of opto-electronic mixing in the form of a cross  
correlator (2).
2. System according to Claim 1, characterized in that the grating (24) in  
10 the form of a Littrow system both in the form of Ebert's array and in the  
form of an array according to Fastie is disposed for the multiple  
passage.
3. System according to Claim 1 or 2, characterized in that a grating is  
provided which is a ruled grating for avoiding polarization-dependent  
15 reflections, and which ensures an almost orthogonal incidence on said  
grating (24).
4. System according to the Claims 1 to 3, characterized in that a dielectric  
preliminary filter (22) is provided for suppressing wave lengths beyond  
the working range, which, due to the multiple passage, multiplies its  
20 efficient quality.
5. System according to Claim 4, characterized in that said grating (24) is  
provided for both a rotational movement and a periodically oscillating  
movement for wave length adjustment.
6. System according to Claim 5, characterized in that the combination of

a moved grating (24) with an optical position sensor (28) is provided.

7. System according to the Claims 1 to 6, characterized by a secondary laser (41) for scanning the moving object in order to derive a synchronizing signal for wave length assignment of the output signal of the system.

8. System according to the Claims 1 to 8, characterized by a position sensor (28) for deriving a position signal (8) of the moving object.

9. System according to the Claims 1 to 8, characterized in that said position sensor (28) consists of a line-shaped photodiode (46) with an incremental scale (45) disposed in front of it.

10. System according to Claim 1, characterized in that for optically mixing two optical signals for the generation of a working signal, a non-linear opto-electronic component (30) is provided.

11. System according to Claim 1 or 10, characterized in that said non-linear opto-electronic component (30) is a photodiode (32).

12. System according to Claim 1, 10 or 11, characterized in that said photodiode (32) is provided for being directly irradiated from both light sources (39, 40) for combining the optical signals.

13. System according to Claim 1, 10 or 11, characterized by a bulk or fiber optical Y -type coupler (48) for combining the optical signals.

14. System according to Claim 1 or Claims 10 to 13, characterized in that said electronic mixed signal is within the range of the low-frequency band.

15. System according to Claim 10 or Claims 10 to 14, characterized by a signal processor (35) for processing, rectification and further analysis of the low-frequency useful signal.
- 5 16. System according to Claim 1 or Claims 10 to 15, characterized by a tunable laser (38) for generating the reference radiation.
17. System according to Claim 1 or Claims 10 to 16, characterized in that said tunable laser (38) is a diode laser or a fiber laser.
18. System according to Claim 1 or Claims 10 to 17, characterized by a laser (38) that is commutable in increments and finely tunable within  
10 each segmental range for generating said reference radiation.
19. Method of monitoring the performance of DWDM multi-wavelength systems, characterized in that a system according to Claims 1 to 18 is applied.